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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/AIV/2014-15

10.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	10.07.2014

Sl No.	Details	Trial No.			Average
		1	2	3	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	392	387	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	89	85	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	307	298	299	
4	Aggregate Impact value = percent fines	21.68	23.00	22.14	
	$100^* (W_2/W_1)\%$				22.27

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/AIV/2014-15 10.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Sample ID	WMM Layer
Type of Mix	Wet Mix macadam
Date of Testing	10.07.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	382	383	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	81	83	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	300	299	
4	Aggregate Impact value = percent fines	21.20	21.67	22.34	
	100* (W_2/W_1)%				21.74

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Sample ID	WMM Layer
Type of Mix	Wet Mix macadam
Date of Testing	10.07.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	383	384	386	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	85	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	299	299	
4	Aggregate Impact value = percent fines	21.67	22.14	22.54	
	$100^* (W_2/W_1)\%$				22.12

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Sample ID	WMM Layer
Type of Mix	Wet Mix macadam
Date of Testing	10.07.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	386	387	389	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	88	90	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	299	299	
4	Aggregate Impact value = percent fines	22.02	22.74	23.14	
	100* (W_2/W_1)%				22.63

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/S-T/2014-15 10.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	10.07.2014

Result : Flakiness Index = **11.85%**

Elongation Index = **13.76%**

Result : Combined Flakiness & Elongation index 25.61%

Note:

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Job No.: CTCE/BBMP/W.No.07/KRIDL/WMM/S-T/2014-15 10.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	10.07.2014

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.23%**

Elongation Index = **13.24%**

Result : Combined Flakiness & Elongation index 24.47%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
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Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	10.07.2014

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.38%**

Elongation Index = **13.46%**

Result : Combined Flakiness & Elongation index 24.84%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
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Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	10.07.2014

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **11.67%**

Elongation Index = **13.49%**

Result : Combined Flakiness & Elongation index **25.16%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

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ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of Work : Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.

Reference : AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014

Date of Testing : 10.07.2014

Material : WMM

Sample Location : WMM Mix Plant

As per MORTH Table 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	22.35	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	:	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	:	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
SAMPLE ID	:	Bitumen
DATE OF TESTING		21.07.2014

The results of the tests conducted on the bitumen sample using for Semi Dense Bituminous Concrete.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	IS :1203 -1978 (RA-2009)	90	80 to 100
2	Softening point, °C	IS :1205 -1978 (RA-2009)	49	Min. 40
3	Ductility at 27°C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, °C	IS :1209 -1978 (RA-2009)	284	Min. 220

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SDBC/AIV/2014-15 . 21.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.07.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	383	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	301	299	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	21.41	22.34	21.87

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

Note:

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21.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.07.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	384	387	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	300	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.14	22.48	22.31

Comments:

→ Maximum allowable Aggregate Impact value for Semi Dense Bituminous Concrete is 27%

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.07.2014

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Result : Flakiness Index = **11.46%**

Elongation Index = **13.27%**

Result : Combined Flakiness & Elongation index **24.73%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SDBC/Shape_T/2014-15 21.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
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Name of Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	21.07.2014

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Result : Flakiness Index = **11.29%**

Elongation Index = **13.72%**

Result : Combined Flakiness & Elongation index **25.01%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Semi Dense Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SDBC/Stripping/2014-15 23.07.2014

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Type of Mix	Semi Dense Bituminous Concrete
Date of Testing	23.07.2014

Type of binder : 80/100
Percentage of binder used : 5.0% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.0 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	2.5	2.70	97.30
2	2.7		
3	2.9		

Comments:

→ Minimum allowable Aggregate retained coating for Semi Dense Bituminous Concrete is 95%

Note:

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Job No.: CTCE/BBMP/W.No.07/KRIDL/Sp_Wa/2014-15 23.07.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Type of Mix	Semi Dense Bituminous Concrete
Source / Location	Hotmix Plant, Bangalore
Date of Testing	23.07.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	1995	2008	2010	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1240	1253	1255	
4	Weight of saturated surface dry aggregate in air	W_3 g	2005	2014	2015	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	765	761	760	
6	Weight of oven dried aggregate	W_4 g	1991	1997	2000	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.603	2.624	2.632	2.619
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.651	2.684	2.685	2.673
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.70%	0.85%	0.75%	0.77%

Comments:

→ Maximum allowable Aggregate Water absorption value for Semi Dense Bituminous Concrete is 2.0%

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BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AASHTO T 164

CLIENT	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
SAMPLE I/D	Roads in Munigurappa layout Ward No.07 BBMP, Bangalore.
DATE OF TESTING	23.07.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475.5	476.5
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	24.5	23.50
7. Bitumen content in %	4.90	4.70
8. Average	**4.80**	

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SDBC/Bit/2014-15 23.07.2014

BITUMEN CONTENT AFTER GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AASHTO T 30

CLIENT	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
SAMPLE I/D	Roads in Munigurappa layout Ward No.07 BBMP, Bangalore.
DATE OF TESTING	23.07.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-4 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	37.42	7.87	7.87	92.13	90-100
4.75	262.9	55.29	63.16	36.84	35-51
2.36	55.43	11.66	74.82	25.18	24-39
1.18	42.69	8.98	83.79	16.21	15-30
0.3	25.92	5.45	89.25	10.75	9-19
0.075	27.58	5.80	95.05	4.95	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-4 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	38.63	8.11	8.11	91.89	90-100
4.75	262.8	55.15	63.26	36.74	35-51
2.36	56.34	11.82	75.08	24.92	24-39
1.18	44.87	9.42	84.50	15.50	15-30
0.3	23.59	4.95	89.45	10.55	9-19
0.075	28.43	5.97	95.42	4.58	3-8

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SDBC/Bitumen/2014-15 23.07.2014

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AS per IRC : SP : 11 - 1984

CLIENT	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
SAMPLE I/D	Roads in Munigurappa Layout, Ward No. 07
DATE OF TESTING	23.07.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	474	475
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	26.00	25.00
7. Bitumen content in %	5.20	5.00
8. Average	**5.10**	

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SDBC/Gradation/2014-15 23.07.2014

BITUMEN GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS : 2386 and IRC : SP : 11 - 1984

CLIENT	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
REFERENCE	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
SAMPLE I/D	Roads in Munigurappa Layout, Ward No. 07
DATE OF TESTING	23.07.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	24.63	5.20	5.20	94.80	90-100
4.75	256.87	54.19	59.39	40.61	35-51
2.36	60.23	12.71	72.09	27.91	24-39
1.18	46.85	9.88	81.98	18.02	15-30
0.3	28.94	6.11	88.08	11.92	9-19
0.075	28.23	5.96	94.04	5.96	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	26.98	5.68	5.68	94.32	90-100
4.75	262.41	55.24	60.92	39.08	35-51
2.36	50.27	10.58	71.51	28.49	24-39
1.18	32.16	6.77	78.28	21.72	15-30
0.3	29.65	6.24	84.52	15.48	9-19
0.075	42.14	8.87	93.39	6.61	3-8

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SDBC/AGG/2014-15 23.07.2014

Aggregate Gradation Test

IS : 2386 Part I

Client	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Semi Dense Bituminous Concrete (SDBC)
Date of Testing	23.07.2014

Total Weight of Sample: **5650** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	458	8.1	8.11	91.89	90-100	
4.75	2896	51.3	59.36	40.64	35-51	
2.36	712	12.6	71.96	28.04	24-39	
1.18	486	8.6	80.57	19.43	15-30	
0.3	356	6.3	86.87	13.13	9-19	
0.075	378	6.7	93.56	6.44	3-8	

Total Weight of Sample: **5550** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	Remarks
13.2	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
9.5	395	7.1	7.12	92.88	90-100	
4.75	2994	53.9	61.06	38.94	35-51	
2.36	692	12.5	73.53	26.47	24-39	
1.18	462	8.3	81.86	18.14	15-30	
0.3	279	5.0	86.88	13.12	9-19	
0.075	425	7.7	94.54	5.46	3-8	

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Job No.: CTCE/BBMP/W.No.07/KRIDL/SDBC/Stability/2014-15 23.07.2014

TEST REPORT ON STABILITY OF MIX

Client	:	**Asst. Executive Engineer,** Kodigehalli Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
Name of the work	:	Improvements of Roads in Munigurappa Layout in Ward No.07 Byatarayanapura, Kodigehalli Sub Division, BBMP, Bangalore.
Reference	:	AEE/(KOD.SUB.DIV)/67/A/2014-15 Dated: 26.06.2014
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Semi Dense Bituminous Concrete
Date of Testing	:	23.07.2014

The results of the tests conducted on the bituminous mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-16)
1	Marshal Stability, at 60° C, Kn	10.25	10.40	8.2 Kn (min)
2	Marshal flow at 60° C, mm	2.40	2.65	2 – 4
3	Percent air voids	3.35	4.10	3 – 5
4	Percent voids in mineral aggregates (VMA %)	14.30	14.55	13 - 15
5	Percent voids filled with Bitumen (VFB %)	72.25	72.40	65 – 78
6	Density, g/cc	2.27	2.26	---

Note:

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